Regional Municipality of Ottawa-Carleton Planning Department April, 1983

official plan review

EMPLOYMENT PROJECTIONS

OTTAWA-CARLETON, 1981-2001

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summary

EMPLOYMENT PROJECTION SUMMARY

Relationship Between Population and Jobs

1. The rate of population growth is most closely associated with the rate of migration into and out of Ottawa-Carleton, which occurs primarily in response to job opportunities. Some jobs exist to serve the local population such as trade, local government and services, while others are mainly oriented to larger external markets, such as federal government employment and employment in advanced technology manufacturing. The demand for growth in these export oriented sectors influences the rate of migration into the Region and therefore the rate of population change.

2. Theoretically, techniques exist to estimate the strength of one Region in a particular sector relative to the performance of the province in total, for example. It is also possible, hypothetically, to estimate how many population serving jobs will be created for every one export oriented job. However, these techniques require data that are not available and therefore the exercise cannot be applied to the Ottawa-Carleton Region.

3. Alternatively, employment projections can be estimated based on given population projections. The number of jobs required support a given population is primarily a function of the age structure of the population and the proportion of the population participating in the labour force.

Purpose of Report

The purpose of this report is to:

1. Estimate how many jobs would be required in Ottawa-Carleton to support two different population levels in 1991 and 2001, in light of expectations concerning age structure and participation rates.

2. Investigate the effects of changes in the participation rate, unemployment rate, proportion of the labour force working part time, multiple job holdings and commuting.

3. Investigate the reasonableness of the required number of jobs based on the performance of the economy in recent years and what may be expected in the future by sector. This particular exercise is mainly to show the relative influence of each sector and to aid in estimating the land requirements and employment distribution of a future employment base.

Summary of Report

1. A range of population projections between a low of 623,000 and a high of 723,000 is considered to represent all reasonable growth trends for the turn of the century in Ottawa-Carleton, based on the following trends in job creation.

   a) Low projection: This represents the lowest option for future employment growth in the Region of approximately 353,000 jobs in Ottawa-Carleton in 2001, an average growth of 3,000 jobs per year for 20 years. It mainly results from slow federal government expansion, averaging 0.3% compounded annually.

      This total level of jobs is associated with a population of 623,000, if participation rates average 70%, 7% are unemployed, 4% have more than one job, and 17%

work part time. This combination of factors is very similar to the situation in 1981.

b) High projection: This option represents the highest rates of growth likely to be achieved of approximately 443,000 jobs in the Region at the turn of the century, an average growth of 7,470 jobs per year for 20 years. It is largely a result of a constant steady growth of 2.0% compounded annually in federal government employment.

This total level of jobs is associated with a population of 723,000 if participation rates average 73%, 5% are unemployed, 17% work part time and 4% have more than one job. This is an optimistic projection in that increased participation results from real growth in manpower requirements rather than increasing the part time component. In such an economy it is not unreasonable to expect lower unemployment rates.

2. Influence of the Participation Rate: The variation in the participation rate has more influence on the relationship between jobs and population than does any other variable. For example, 353,000 jobs in the Region at the turn of the century is associated with a population of 623,000 if the participation rate is 70% but 670,300 people if the participation rate is 65%, all other things being equal. Clearly, the availability of part time employment will have a major effect on participation in the labour force. Between 1976 and 1981 part time employment increased from 13% to 17% of all jobs. This changing proportion represented 68% of the increase in employment in the five year period.

3. Influence of Federal Government Growth Rates: Federal government administration is the major but not sole influence on the rate of growth in jobs in Ottawa-Carleton. If the federal government grows by 2% compounded per year it will account for 43,000 new jobs by the turn of the century. This represents close to 30% of all new jobs expected under the high projection. If it grows by 0.3% compounded annually it will account for 4,950 new jobs by the turn of the century which represents only 8% of all new jobs expected under the low projection.

4. Land Requirements and Employment Distribution: It is not the intent of this position paper to express a preferred distribution. In the report, options for future Growth in Ottawa-Carleton outlines various alternative distribution patterns for testing purposes. Upon completion of the detailed analyses, it will be appropriate to comment on the implications of various distribution options.

Clearly, however, there is a distinct difference in the two projections and their land requirements, particularly with respect to future office employment and future industrial land consumption. These differences will be evaluated in the light of employment distribution options.

a. Introduction

A. INTRODUCTION

1. Purpose

An employment projection has been prepared to test the reasonableness of the Region's population projections. In addition, it tests the validity of some of the assumptions and policies in the Official Plan adopted in 1974 relating to employment. This report should therefore be read in conjunction with the paper on Population projections.

2. Background

The Regional Official Plan is a long term document and therefore, an appreciation of the possible trends which may affect the Region over the long term is required. It is clear that any projection of future trends is dependent on a myriad of assumptions and is highly influenced by past experience. Nevertheless, it is possible, and very useful to investigate the relationship between various factors and to show how a change in one can affect a change in another. To this end, the Planning Department has produced a series of reports on mobility, population projections, household projections and employment in Ottawa-Carleton.[1] This report supplements the examination of future growth trends by analysing employment prospects in Ottawa-Carleton.

3. Relationship Between Population and Jobs

Changes in population are dependent on the amount of natural increase (births less deaths) and the net level of migration to or from Ottawa-Carleton. The more variable and more uncertain factor is migration. It is therefore the more difficult component to project. However, it is generally agreed that the prime motivation for moving is the availability of employment opportunities. So, any given population projection is associated with certain assumptions concerning job creation.

How reasonable the employment growth assumption is, and therefore how reasonable the population growth rate is, can be assessed by investigating future prospects in each sector of the economy.

However, the relationship between population and employment is not simple. An increase in the population creates an increased demand for goods and services in the Region and thereby causes the employment to increase. The process is best explained with reference to Figure 1. Although this is a simplified diagram it serves to explain a few underlying concepts.

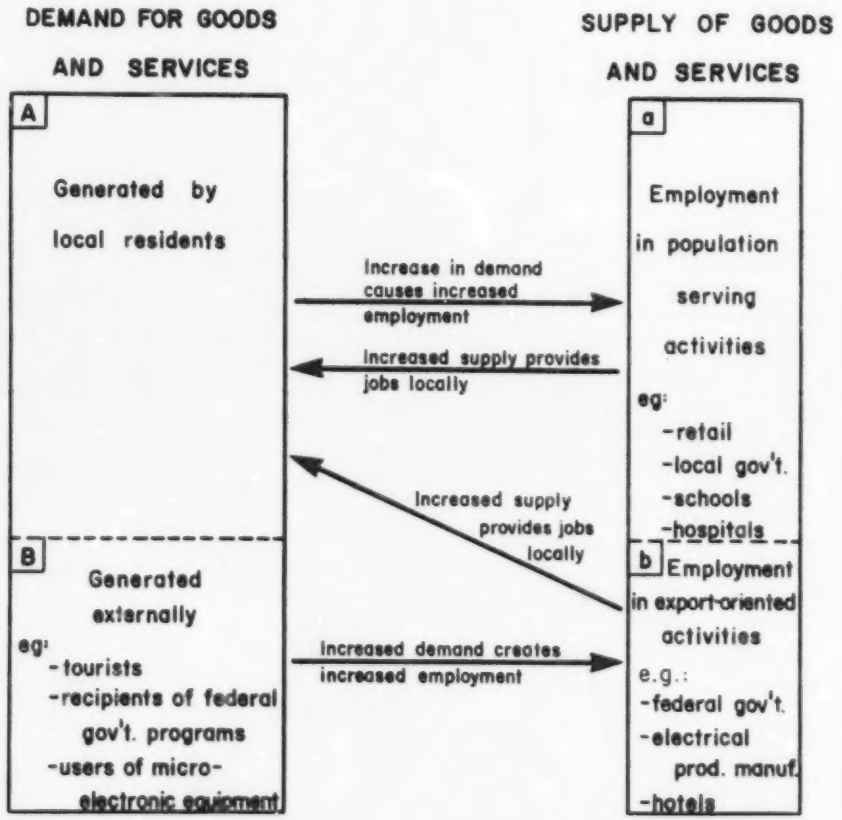
Employment increases or decreases in response to changes in the demand for goods and services. Box A represents the demand that is generated by the population of Ottawa-Carleton. This demand will change if: 1) the rate of natural increase changes, 2) the level of in-migration changes, 3) the population structure changes, 4) disposable income changes, 5) tastes changes, 6) technology causes a change ... and so on. All of these factors, excluding net-migration, generally occur slowly and in a somewhat predictable fashion.

Box B represents those demands generated by the population outside of Ottawa-Carleton. Some examples affecting Ottawa-Carleton are the demands of tourists, demands generated by all Canadians for new federal programs and demands of a hotel in the United States, say, for a new switching system for their telephones. Each of these would generate employment in Ottawa-Carleton for local residents. These are termed export oriented employment activities.

The most important concept here is that there is little tendency

Figure 1

RELATIONSHIP BETWEEN POPULATION AND JOBS



for net in-migration to occur in the absence of employment growth in export oriented activities. Rather, a balance would be achieved between the local demand for goods and services and the local supply.

Externally induced demand upsets this equilibrium and causes movements of people in response to job opportunities. It is emphasized that this description of the process is highly simplified.

Two important points have been established:

1. There is a measurable relationship between the population of Ottawa-Carleton and employment in 'population serving' establishments.

2. Net in-migration is only likely to occur if there is an increased demand for export-oriented goods and services.

However, there is a large degree of overlap. Most export oriented establishments, such as those catering to tourists, also serve the local population. In addi-

tion, expansion in some export oriented activity may cause the local unemployment rate to fall, or the participation rate to increase without any net effect on the movement of people. Conversely, job creation may cause the in-migration of a skilled labour force and may have little impact on the resident population. So, it becomes clear that the mathematics of a projection are very complicated.

4. Employment Projection Method

Bearing in mind that the purpose of this exercise is to test the reasonableness of the Region's population projections[2], two methods were used. Neither one is a prediction.

The first method is a population-based projection. Simply put, it assesses how many jobs would be required to support two different population levels in 1991 and 2001 in light of certain assumptions on age structure, participation in the labour force and unemployment. Therefore it can be said that if there are P people in 2001 with the following characteristics, it will be necessary to provide E jobs.

The second method is an employment-based projection. In this case, each sector is examined in terms of its likely future prospects. Those sectors that are primarily population-serving are projected in relation to a population level. Those sectors that are primarily export oriented are projected based on likely growth rates. Employment growth or decline is estimated for each sector and the total of all sectors is a projection for Ottawa-Carleton.

b. Population-based employment projection

B. POPULATION-BASED EMPLOYMENT PROJECTION

1. Introduction

A population-based employment projection accepts a given population projection and applies to it certain assumptions concerning participation rates and unemployment rates in the future. This results in the number of residents who would be required to be employed to support the given population. In addition, certain assumptions are made concerning those who have more than one job and the amount of commuting into or out of the area. The final result is the number of jobs in the area under study. This process is described in Figure 2.

FIGURE 2

POPULATION-BASED EMPLOYMENT PROJECTION

GIVEN		ASSUMPTION		RESULT
1. POPULATION BY AGE GROUP	X	PARTICIPATION RATE BY AGE GROUP	=	LABOUR FORCE BY AGE GROUP
2. LABOUR FORCE BY AGE GROUP	-	UNEMPLOYMENT BY AGE GROUP	=	EMPLOYED LABOUR FORCE
3. EMPLOYED LABOUR FORCE	+	MULTIPLE JOB HOLDINGS	=	NUMBER OF JOBS FILLED BY REGION'S RESIDENTS
4. JOBS HELD BY REGION'S RESIDENTS	+	NET IN(OUT) COMMUTING	=	NUMBER OF JOBS IN REGION

The two most significant factors are: 1) the number of people over 15 years of age and 2) the participation rate of these people. In comparison to these, the other assumptions are refinements of the basic projection.

2. Components of the Population-based Projection

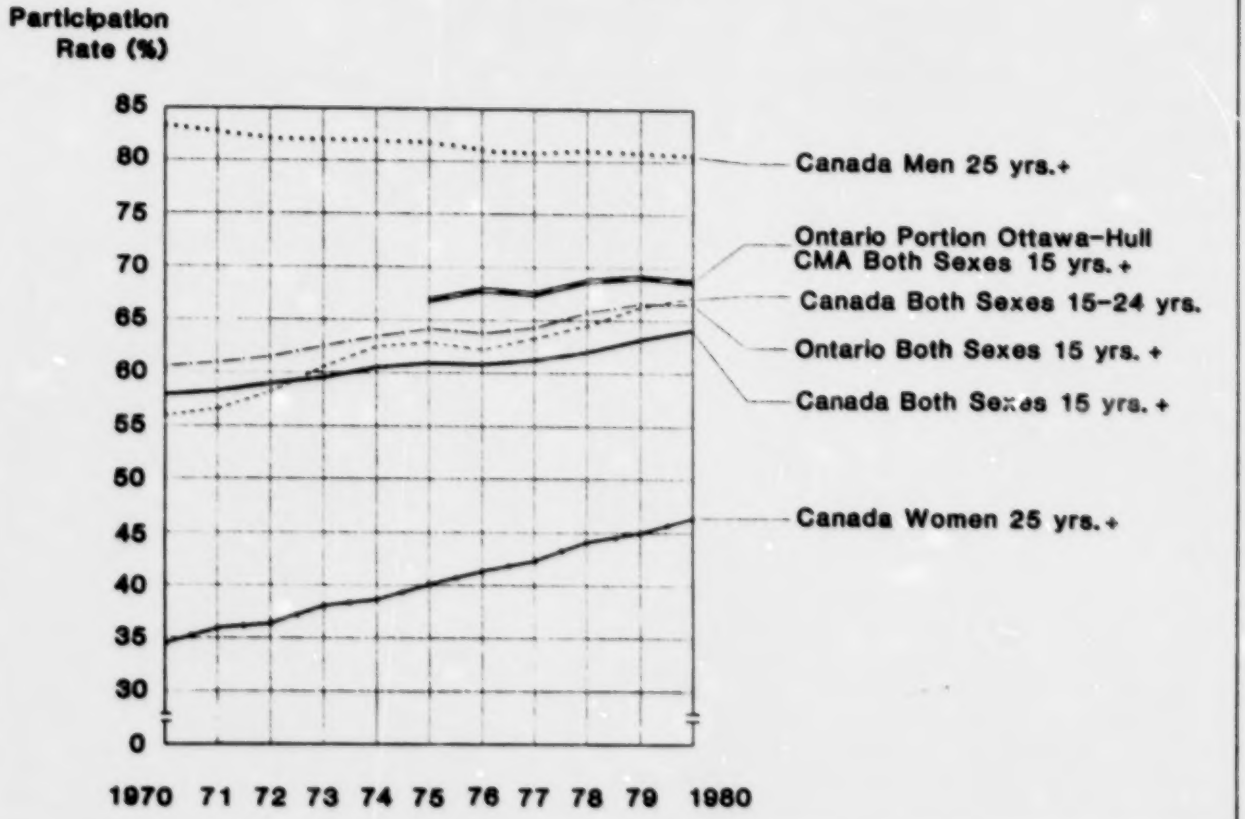
a) Population Projection

Two population projections are examined in this report. The low projection applies current trends with respect to fertility rates, mortality rates and uses a net in-migration level of approximately 1760 people per year. This is equivalent to the average net level of migration between 1976 and 1981 to Ottawa-Carleton. The result is a population of 623,000 in the Region in the year 2001.

A higher projection was also investigated. The major difference is an assumption of an average of 6,000 net in-migrants per year after 1981. This is significantly higher than the average net migration of the last 20 years which was estimated to have been 4,950 per year. A level of 6,000 net migrants per year results in a total population of 723,000 in Ottawa-Carleton in the year 2001.

These two projections delineate a range of populations that could be achieved in Ottawa-Carleton by the turn of the century. For a

Figure 3
HISTORICAL PARTICIPATION RATES

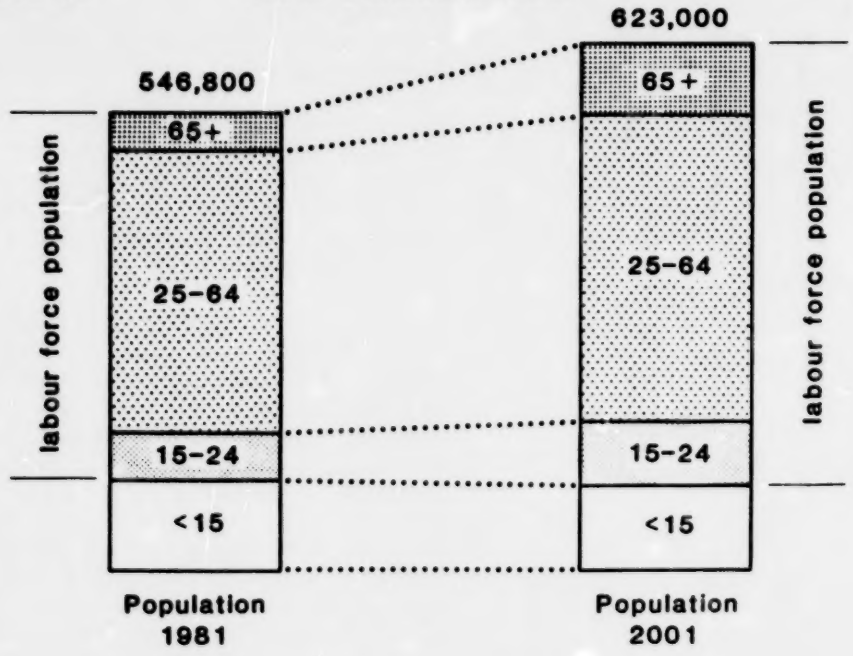


more detailed discussion of the assumptions and method utilized in projecting population, reference should be made to a previous report prepared by the Planning Department[2], and to the report on population projections.

b) Participation Rates

The participation rate is defined as the proportion of any given age group, over 15 years of age, that is in the labour force, either working or looking for work. The average participation rate in the Region in 1976 was

Figure 4a **LOW PROJECTION**



By 2001: (assume for illustrative purposes that the unemployment rate is 7.0%)

If the participation rate is:	Then the employed labour force is:
60%	291,200
65%	315,500
70%	339,700
75%	364,000

The participation rate is that proportion of the labour force population (population 15+) that is working or seeking work.

estimated to be 65%; however, participation rates vary significantly by age and sex.

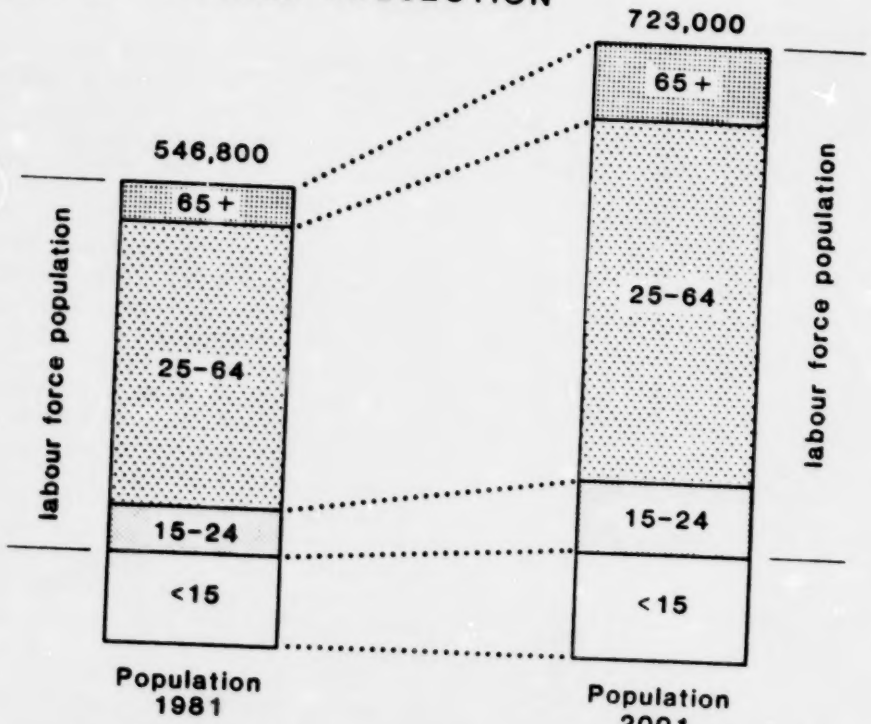
Annual data by age group are only available for Canada as a whole and are presented in Figure 3. Trends in Ottawa-Carleton are similar but, on the whole, the rate is higher.

The overall participation rate has been increasing. This is due to many factors including increased levels of education; a rapid growth in the service sector which has led to work opportunities especially for those with little previous work experience; an increase in the cost of living resulting in the desire for more than one income earner per household; and a growth in the 'consumer society' with an increased demand for goods and services.

The participation rate of youths (men and women aged 15 to 24 years) has been most variable in the past. However, the last decade has shown a continuous increase in youth participation, and studies prepared by the federal government predict a continuation of this trend[3].

The participation rate of women over the age of 24 years, has increased steadily and quickly for three decades and is expected

Figure 4b HIGH PROJECTION



By 2001: (assume for illustrative purposes that the unemployment rate is 7.0%)

If the participation rate is:	Then the employed labour force is:
60%	334,100
65%	362,000
70%	389,800
75%	417,700

The participation rate is that proportion of the labour force population (population 15+) that is working or seeking work.

to continue to increase in the future. The converse is true of men over the age of 24. In this case, the participation rate has shown a gradual, but continous decline. This is mainly due to a decline in the participation rate of men over the age of 55. This is also expected to continue. In general, for both sexes, participation rates decrease in the older age groups.

The combined effect of these three trends has been a steady gradual increase in the overall participation rate. However, for the purpose of this exercise, various reasonable participation rates were tested.

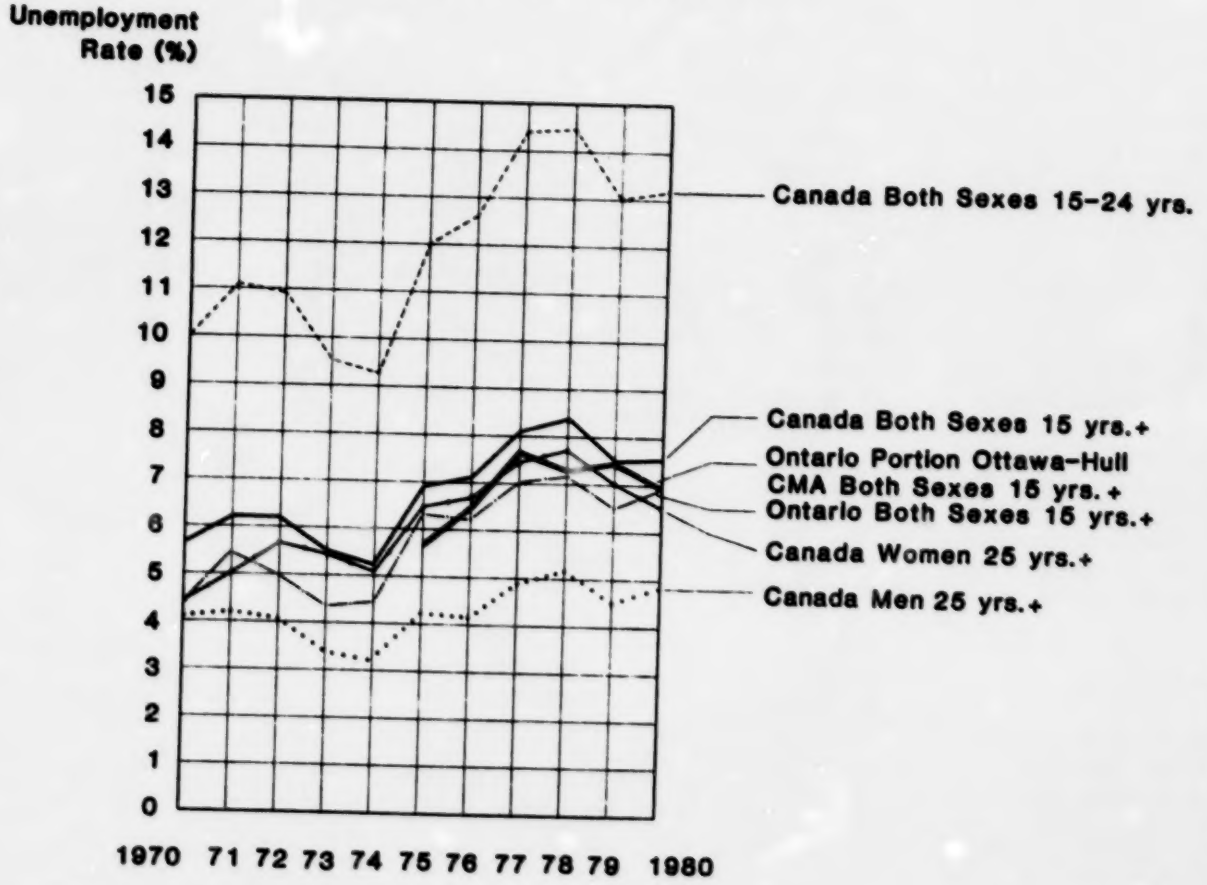
Figures 4(a) and 4(b) depict the growth in the labour force population (the population over 15 years of age) and the results of applying varying levels of participation. The relative importance of this factor is clear when comparing these two figures: although there is a 100,000 difference in the projected populations, a 70% participation rate in the low projection produces a similar employed labour force to the 60% participation rate in the high projection.

c) Unemployment rates

The unemployment rate is that proportion of the labour force

Figure 5

HISTORICAL UNEMPLOYMENT RATES



not working but seeking work. It was estimated to be 6.6% in 1976. It is more difficult to measure a trend in unemployment than it is in participation. Unemployment rates respond quickly to business cycles and economic circumstances, whereas participation rates reflect a more pervasive social or cultural trend. Unemployment rates decrease significantly with increases in age, largely as a result of work experience.

Figure 5 indicates the trend in Canada, Ontario and the RMOC over the last decade in terms of unemployment. Age specific data are only available for Canada as a whole. Variations in the unemployment rate are less significant to the overall projection than are variations in the participation rate. For the purpose of this exercise, unemployment rates were held constant at 7%.

d) Multiple Job Holdings

There are no data on the number of people in Ottawa-Carleton who currently have more than one job. In Canada as a whole, just less than 4% of the employed labour force hold multiple jobs. It has been assumed in this report that 4% of the Region's labour force have two jobs.

Therefore, a low projection of 340,000 residents employed would result in 353,000 jobs held by residents of Ottawa-Carleton . A high projection of 390,000 residents employed would result in 405,000 jobs held by residents of Ottawa-Carleton.

e) Commuting

So far, the number of jobs held by residents of Ottawa-Carleton, has been calculated. This is not necessarily the same as the number of jobs in Ottawa-Carleton as some residents work outside the RMOC and some people who work here, live outside the RMOC. Therefore, it is necessary to account for commuting into and out of Ottawa-Carleton.

There are no current data on commuting. However, it is known that for federal government jobs in 1981, there was a net value of 750 in-commuters.[4] Given this low value for the major employer, and in the absence of any other data, it is assumed for the purpose of this exercise that net-commuting is zero. It will be possible to refine this assumption upon receipt of the 1981 census data (probably late in 1983).

3. Employment Projection

Given the above discussion, employment in Ottawa-Carleton in 2001 is projected to be in the neighbourhood of 353,000 under the lower population projection and 405,000 under the higher population projection. In the first case, this represents 1.76 persons per job in Ottawa-Carleton in 2001 compared to 1.9 persons per job in 1981. In the second case this represents 1.78 persons per job in Ottawa-Carleton in 2001. Whether or not this is a reasonable range depends on the prospects for employment growth in each sector of the local economy. The next section of the report deals with this.

c. employment-based employment projection

C. EMPLOYMENT-BASED EMPLOYMENT PROJECTION

1. Introduction

Using the 1981 employment distribution by sector as a base, each sector is projected individually to arrive at the total number of jobs in Ottawa-Carleton in 2001. The following aspects of employment are investigated as part of the projection:

a) ratio of employment to population - if the activity being considered is basically there to serve the resident population, then the number of employees required to meet this demand is investigated. In Figure 1 in the Introduction, this was shown as the relationship between box A and box a. This is a simplified approach as there are many factors that may cause these ratios to change. These are identified in the analysis but it is not easy to quantify them.

b) past trends - First, a warning: Future trends are not dependent on past trends.

However, past trends may indicate likely upper and lower limits to employment change. In addition, they may reveal the circumstances that existed in the past during periods of similar levels of net migration. So, an analysis of past trends is an integral part of any projection.

Second, a shortcoming: There is a dearth of information on past trends relating to activities in the Region per se, and those existing data are usually quite out of date.

In addition, much of the information is collected on a sample basis and is unreliable or inappropriate for explaining local trends.

c) Where possible, available information on changing market conditions is considered, and how that might affect employment opportunities.

The following analysis must be read bearing in mind the purpose for which it was written. The intent is to show what is likely to occur when discussing population related employment, and what could occur, when considering export related employment (as defined in the introduction). The first type of employment is projected in a reasonable fashion given what we know about these relationships. The second type of employment is projected on the basis of certain assumptions identified in the text. This results in the rates of sectoral employment growth that would have to be maintained to achieve a particular population level. In this way it will be possible to review performance from time to time.

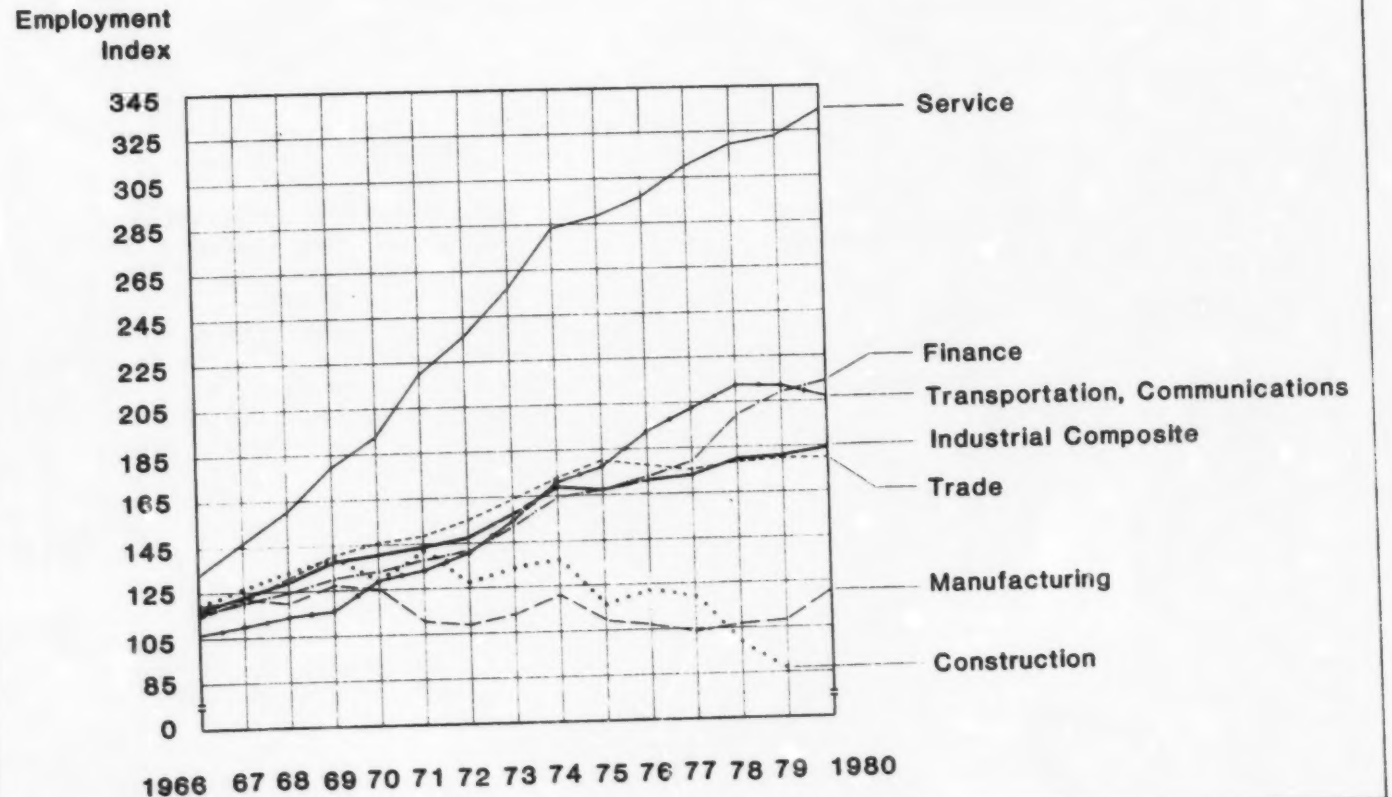
2. Full-time and Part-time Employment

Between 1976 and 1981, it is estimated that full-time employment increased by 2.9% from 238,200 to 245,000. In the same period, part-time employment increased by 42.2% from 34,300 to 48,700. Therefore, total employment increased by 7.9% over the five years. This reveals an interesting point: if job sharing, for example, becomes more prevalent, there could occur an overall increase in participation rates and in total employment without any actual expansion in the local economy. That is, the employment requirements of the local firms have not actually increased.

To avoid problems associated with this, the sector approach deals with an estimate of "full-time equivalents" which is calculated as all full-time jobs and one-half of part-time jobs. On this basis, employment between 1976 and 1981 increased by 5.5% or

Figure 6

EMPLOYMENT INDEX NUMBERS, OTTAWA-HULL CMA, 1966-1980 (1961-100)

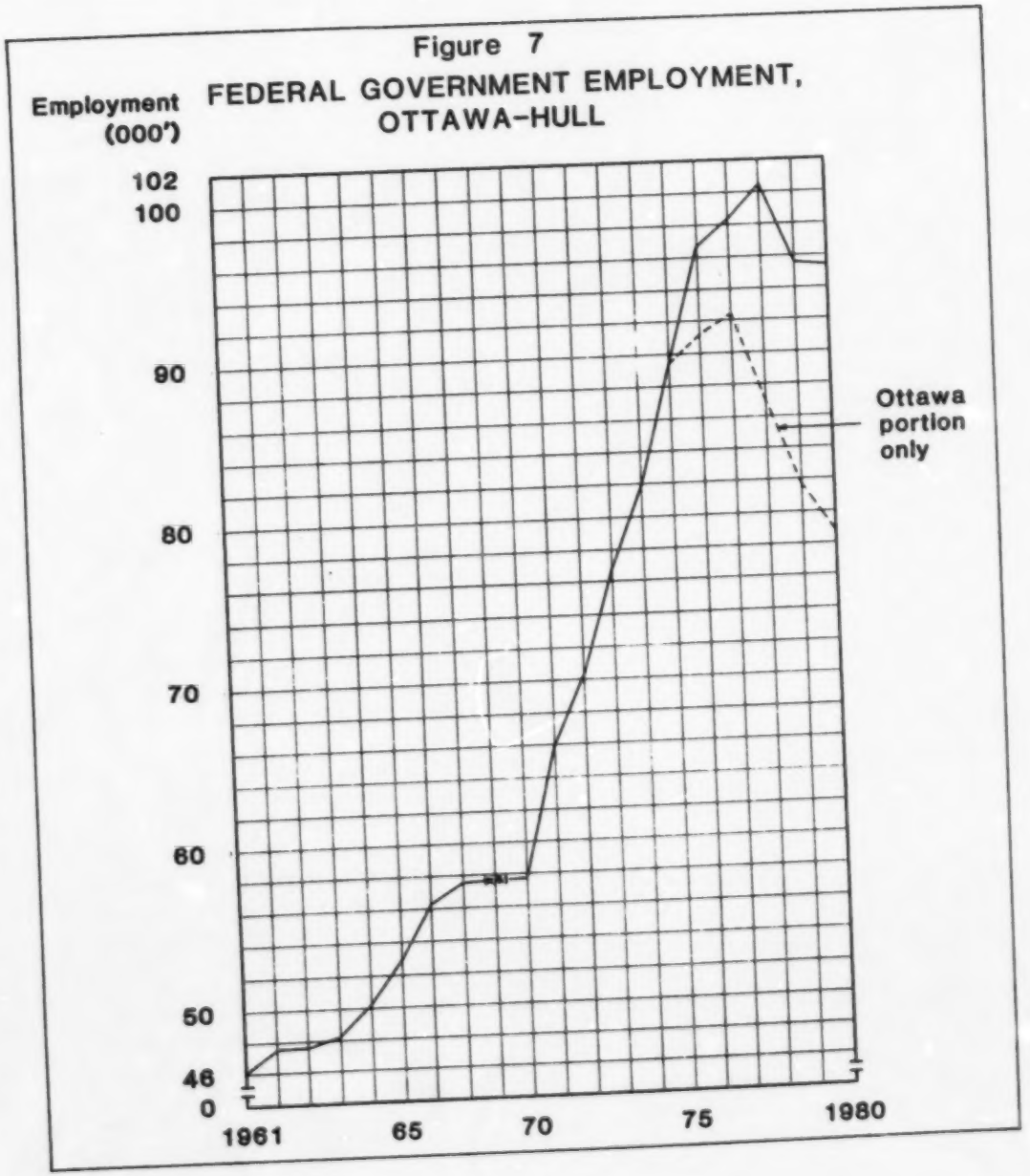


2810 full-time equivalent jobs per year. This is compared to 4260 total jobs per year.

3. Sector Analysis[5]

Tables 13(a), and 13(b), at the end of this section summarize the following projections. In addition, Figure 6 will be referred to from time to time. This figure portrays employment index-

Figure 7



es for all commercial activities in the Ottawa-Hull C.M.A. for the period 1970 to 1980. In other words, it does not include any public sector component of any activity.

Throughout this section two projections will be identified as I and II, where I is the lower rate of growth and II is the higher.

a) Federal Administration

For the purpose of this exercise, federal government employment includes all departments, military personnel, crown corporations, councils, commissions, boards and other agencies.

Currently, this sector represents 33% of total employment in the Region. It is so large that a very small change in the growth rate can have significant repercussions over the 20 year period for the Region as a whole.

Surprisingly enough, historical trends of this employment are difficult to locate due to varying definitions of federal administration. The best source gives annual totals since 1961 for federal government departments but excludes all the other categories included in our definition.[6] Nevertheless, this gives an indication of trend. Figure 7 summarizes these data.

Between 1961 and 1970 federal government employment grew at a fairly steady rate of 1.7% per year. Between 1971 and 1975 the average annual growth rose tremendously to 6.0% per year, followed by a five year period of absolute decline. Over the 20 year period then, Ottawa-Hull experienced an average annual increase of 3.6%, but this 20 year average represents periods of very different rates of growth. The National Capital Commission, measuring federal government employment as in the original definition, recorded a 1.1% annual growth rate in the National Capital Region in the past five years[7].

Federal government employment is primarily export oriented. That is, it does not exist here to provide services to the local population but rather to the nation as a whole.

The rate of public sector growth is much more dependent on political decisions than it is on any other factor.[8] National population growth, population structure, income levels and the like, play only a minor role in determining future growth. For the purpose of this projection, two rates have been selected: a low of 0.3% per year and a high of 2.0% compounded per year in the National Capital Region. If it is assumed that no major future relocations of federal employment will occur from Ottawa-Carleton to Hull, then Ottawa-Carleton itself would experience these rates, and achieve a low of 93,200 to a high of 131,000 by 2001. In the short-term, it is more likely that the Region will experience levels closer to 1.0%. Table 1 shows the two projections.

TABLE 1
FEDERAL GOVERNMENT EMPLOYMENT*

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	96400	88200	90800	107500	93200	131100

*In Tables 1 to 13, employment for 1976 and 1981 is derived from the Employment Surveys conducted by the Ottawa-Carleton Planning Department and represents full time equivalent-jobs which is all full time employment and one half of part time employment.

b) Community, Business and Personal Services

1) Community Services

This category includes education and related services, health and welfare services, religious organizations and amusement and recreation services. In 1981, community services accounted for approximately 15% of all employment in Ottawa-Carleton, one-half of this being in education and slightly less than half being in health and welfare. There are no comparable historical data on employment in this group.

Employment in this sector is primarily population serving. In general, community service employment is related to the size of the Region's population but is affected by the population structure. In the recent past, declining enrollment in primary schools has been off-set by increasing enrollment in secondary schools and in post-secondary institutions. In the future, these enrollments will also decline. Over the long term the emphasis of health delivery

systems will be influenced by an increase in population over 65 years of age and a possible increase in the per capita demands for health care generally.

Also, it is clear that the universities, colleges and hospitals will serve a community extending beyond regional boundaries. Nevertheless, the over-riding influence on education, health and recreation employment is the number of people living in Ottawa-Carleton. So, the ratio of jobs to population has been kept constant at the 1981 level. This results in a community services employment level in Ottawa-Carleton in the year 2001 of a low of 45,300 to a high of 52,600. These are summarized in Table 2.

2) Services to Business Management

This is a diverse group including employment agencies, computer services, accountants, architects, lawyers, engineering and scientific services and so on. In 1981, this employment represented approximately 6% of the total employment in Ottawa-Carleton. There are no historical data except for the period 1976 to 1981. Over these five years, the majority of the growth related to the 'advanced technology' sector.

TABLE 2
COMMUNITY SERVICES EMPLOYMENT

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	36100	39800	43400	46700	45300	52600
Employees/ 1000 people	69.4	72.8	72.8		72.8	

TABLE 3
EMPLOYMENT IN SERVICES TO BUSINESS MANAGEMENT

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	10200	16100	27300	26900	32500	37600
Ave. annual % growth (1976-)	-	9.1	6.6	6.5	4.6	5.2

For the purpose of this projection, growth in computer services and in scientific and professional services is projected to parallel the rate of growth in advanced technology manufacturing. Other services to business management are assumed to retain a constant share of the growth in all services to business management. These are expressed in Table 3.

3) Personal Services

This comprises three sub-groups: 1) personal services such as laundries and barber shops, 2) accommodation and food services, including restaurants and 3)

miscellaneous services such as headquarters for trade organizations. In 1981, the whole group represented approximately 8% of total employment in Ottawa-Carleton.

It is clear that the personal services sub-category is closely related to the size of the resident population. So, this relationship is held constant to the end of the period. The other two sub-categories are not so clearly understood. In the past five years there was tremendous growth in restaurants and taverns. In addition, miscellaneous services increased significantly. It is possible that this high rate of growth could be maintained if the Congress Centre has a significant impact on hotels and restaurants.

Therefore, for the purpose of this exercise the higher 1981 ratio of jobs to population is held constant for the period. This is indicated in Table 4.

TABLE 4
EMPLOYMENT IN PERSONAL SERVICES

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	18600	21900	23800	25700	24900	28900
Employees/ 1000persons	35.7	40.1	40		40	

TABLE 5
EMPLOYMENT IN TRADE

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	33300	35600	41800	44600	45900	52100
Employees/ 1000 households	191	179	179		179	

c) Trade

This category includes both retail and wholesale trade and represented, in 1981, over 13% of all employment in Ottawa-Carleton. Employment in this sector is considered to be mainly related to the number of households and disposable income. In this exercise, the ratio of employees in trade, to households, has been held constant for the twenty year period as indicated in Table 5.

d) Manufacturing

All manufacturing industries represented approximately 7% of total employment in Ottawa-Carleton in 1981. Historical data are available but coverage of firms is incomplete, so the numbers are somewhat misleading. The trend in manufacturing employment since 1966 seems to have fluctuated significantly. Between 1974 and 1979, there was a general decline with a recovery after 1979 to a level comparable to all peaks in

the past. These trends are indicated in Figure 6. If the present rate of increase continues, historical high levels may be surpassed.

The only recent growth in manufacturing of any significance has been in communications equipment manufacturers which increased by over 100% between 1976 and 1981. Most other groups have shown little net change. It is assumed that future trends in the manufacturing sector will depend on the performance of the communications equipment group. For this exercise, two trends are developed.

The first projects a geometric growth pattern where growth is more rapid at the beginning of the period than it is at the end. The second projects a straight line growth pattern in advanced technology manufacturing including any associated spillover into other manufacturing groups such as publishing and scientific industries. In both cases, all other manufacturing employment is held constant. These are indicated in Table 6.

e) Finance, Insurance and Real Estate

Establishments engaged in finance, insurance and real estate activities accounted for 4.5% of total employment in Ottawa-Carleton in 1981. Past trends indicate that growth in this sector has been continuous, albeit at varying rates as indicated in Figure 6. Nevertheless, the average annual growth between 1971 and 1976 was almost the same as the average between 1976 and 1981. This obscures the fact however, that in the past five years there has been an absolute decline in employment in the insurance and real estate component of this group.

Performance in the future will be related to population, house-

TABLE 6
EMPLOYMENT IN MANUFACTURING

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	16100	20600	27200	27000	30400	33400
Ave. Annual % growth (1976-)	-	4.9	3.5	3.4	2.5	2.9

TABLE 7
EMPLOYMENT IN FINANCE, INSURANCE, REAL ESTATE

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	10800	12000	14000	14900	15400	17500
Employees/ 1000 households	62	60.1	60		60	

holds, income, effects of automation, regionalization of services, and growth in other sectors of the economy. In this exercise, employment in finance, insurance and real estate can only be correlated with the number of households in Ottawa-Carleton, as the behaviour of the other indicators is not easily quantified. However, it is clear that the number of households in itself is closely related to the growth in the number of new businesses in this sector. Table 7 summarizes these data.

f) Transportation, Communications and Utilities

This refers to all private sector activities in these groups including air, rail, and truck transport, storage, parking lots, garages, radio and television broadcasting, power and gas distribution and so on. Therefore, it does not include Air Canada, Via Rail, Canada Post and other related activities. In 1981 this sector represented 4.5% of employment in Ottawa-Carleton. This sector experienced rapid expansion between 1971 and 1976 but has slowed considerably since then (See Figure 6). Future trends are difficult to project. Population growth will encourage expansion in this sector but employment in communications is likely to be negatively affected by technological advancements. A low projection has been produced, using a ratio to population that is similar to that of the last five years. A high projection represents a doubling of this rate, similar to what existed in the earlier part of the decade. These are described in Table 8.

TABLE 8
EMPLOYMENT IN TRANSPORTATION, COMMUNICATIONS AND UTILITIES

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	10100	11700	13300	15500	14600	20600
Employees/ 1000 households	57.9	58.7	58.7	62.2	58.7	70.7
Ave. Annual % growth (1976-)		2.9	2.0	2.9	1.6	2.9

TABLE 9
EMPLOYMENT IN CONSTRUCTION

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	11000	9200	9200	13000	9200	13000

g) Construction

This includes general and special contractors and represented about

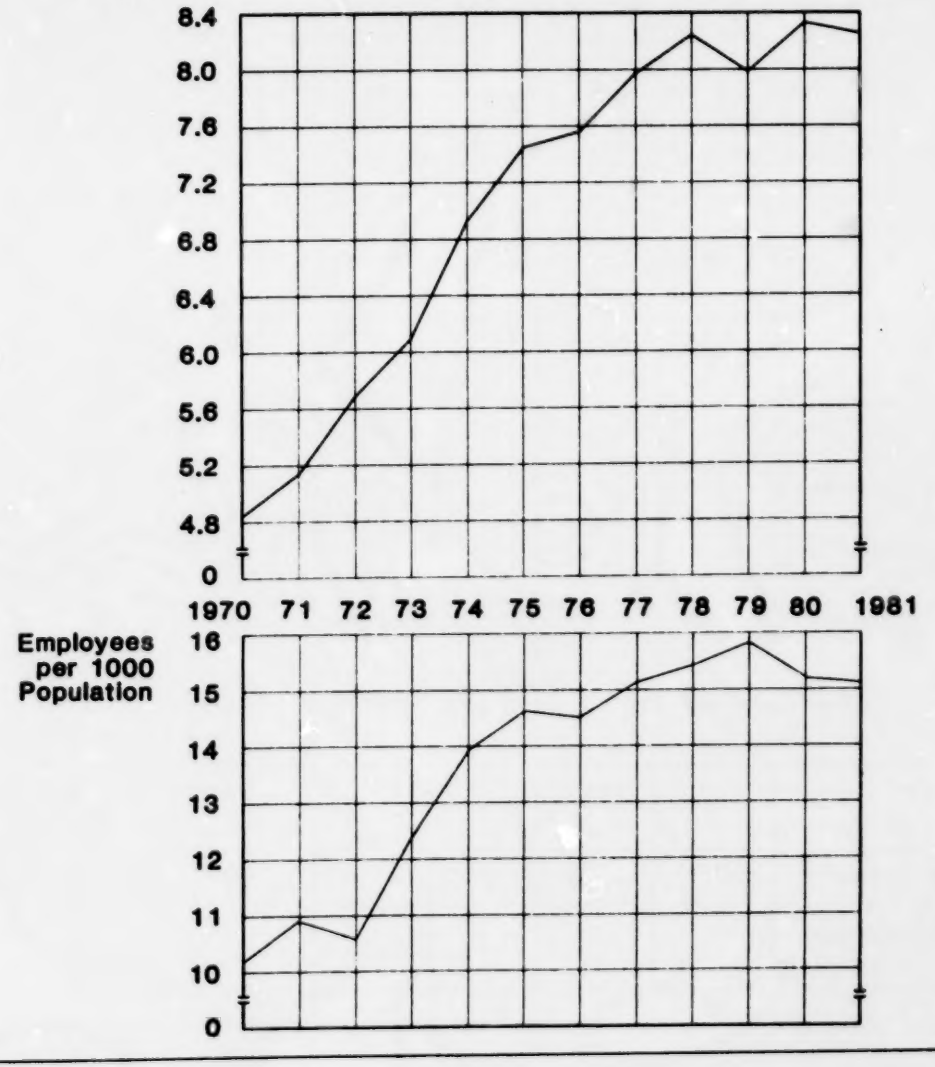
3% of employment in Ottawa-Carleton in 1981. Trends in this sector have been highly fluctuating as expressed in Figure 6. For projection purposes, the low projection shows no change in employment in this sector. The high projection estimates employment equivalent to the levels achieved between 1971 and 1976, a period of similar levels of net-migration. These are summarized in Table 9.

h) Local Administration

This category includes all employees of the RMOC and local municipalities. It also comprises all services and facilities financed primarily by the municipalties such as libraries, recreation centres, O-C Transpo, police and municipal utilities. Employment in this sector was 3% of Ottawa-Carleton's total in 1981.

Past trends show that employment in this group grew at approximately 9.5% annually between 1971 and 1976 and that the rate of growth slowed significantly to 2.9% per year in the next five year period (See Figure 8). Local government employment is not only related to the size of the resident population but also to the level of services provided.

Figure 8
EMPLOYMENT IN LOCAL ADMINISTRATION
1970-1981



Between 1971 and 1976 the ratio of local government jobs to the population of Ottawa-Carleton rose from 10.2 to 15.1. Since then it has remained relatively constant. It is suggested that after a certain threshold of population and level of service are reached, employment will increase in proportion to the increase in population. However, in a period of slow economic expansion there is pressure to keep the local government expansion slow. For this reason, the ratio is held constant throughout the projection period for the high projection but is reduced for the low projection. Table 10 indicates the rate of growth in local government employment that results.

TABLE 10
EMPLOYMENT IN LOCAL ADMINISTRATION

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	7600	8300	7600	9700	7900	10900
Employees/ 1000 population	14.6	15.1	12.7	15.1	12.7	15.1

TABLE 11
EMPLOYMENT IN PROVINCIAL ADMINISTRATION

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	1500*	2300	2000	2700	2200	3000
Employees/ 1000 people	2.9	4.2	3.4	4.2	3.5	4.2

i) Provincial Administration

Provincial government employment is less than 1% of all employment in Ottawa-Carleton. It is projected to perform in the same fashion as local administration and is presented in Table 11.

j) Other Administration

In Ottawa-Carleton this sector primarily comprises foreign embassies and high commissions and is an insignificant proportion of total employment. It is projected to maintain a constant absolute growth per year as summarized in Table 12.

k) Primary Activities

This is also a small proportion of total employment in Ottawa-Carleton. It is likely that agriculture will continue to decline as an employer over the twenty year period.

3. Employment Projection Summary

The sum of all the sector projections produces an employment projection for Ottawa-Carleton. Two projections are produced here for 1981, 1991 and 2001. The first, identified as Projection I throughout the report, is based on modest rates of growth in the expert oriented sector and a population of 623,000 applied to the population serving sectors in 2001.

TABLE 12
EMPLOYMENT IN OTHER ADMINISTRATION

Year	1976	1981	1991		2001	
			I	II	I	II
Employment	1300	1600	1900	1900	2200	2200
Ave. Annual % growth (1976-)	-	4.1	2.5		2.1	

The second, identified as Projection II, represents a high rate of growth in the export oriented sectors and a population of 723,000 applied to the population serving sectors in 2001.

Table 14 summarizes the comparative features of the two projections:

1. The first item, the population, is used to project the employment that is considered to be primarily population serving as outlined in the preceeding discussion.

2. Full-time equivalent jobs represents the sum of the sector projections. Full-time equivalents best represent the employers' requirements for person-years.

3. Total jobs is calculated on the assumption that 17% of the jobs will be filled by people working part time as was the situation in 1981. This is the figure that represents the total number of potential jobs in Ottawa-Carleton in 1981 and under each projection in 2001.

4. Under both projections, the persons supported per job are shown to decrease. This trend is reasonable in that the population will continue to mature and it is likely that participation rates will continue to increase. In addition, part time employment may continue to increase.

5. Employed labour force is calculated assuming that 4% of the people have more than one job (an estimate based on the Canadian experience in general). This may indeed be an underestimate of the proportion and therefore an overestimation of the employed labour force. These figures can be compared to those in Figures 4(a) and 4(b).

6. If these are compared to Figures 4(a) and 4(b) it is seen that the low projection represents a 70% participation rate and a 7% unemployment rate, within the range identified in the population-based projection. The high projection represents a 73% participation rate and a 5% unemployment rate. Given a current participation rate of between 65% and 70%, this may be considered optimistic.

In summary, the low population projection is a reasonable lower limit to the range of projections. However, if federal government grows at an average rate of 2% per year for the 20 year period, the population may exceed the high projection of 723,000.

Two aspects of these projections are emphasized: 1. Any change in assumptions concerning participation rates, unemployment rates, part time employment, multiple job holdings and so on, can have a considerable effect on the overall projection. For example, if there are 353,000 jobs in Ottawa-Carleton at the

TABLE 13(a)
PROJECTION I
SUMMARY

	EMPLOYMENT[1]				AVERAGE ANNUAL % GROWTH (COMPOUND)			% OF TOTAL EMPLOYMENT				AVERAGE ANNUAL EMPLOYMENT INCREASE (1981-2001)
	1976	1981	1991	2001	'76-'81	'81-'91	'91-2001	1976	1981	1991	2001	
Primary Activity	2300	2100	2000	2000	-1.8	-0.5	0	0.9	0.8	0.7	0.6	-5
Manufacturing	16100	20600	27200	30400	4.9	2.8	1.1	6.3	7.6	8.9	9.3	490
Construction	11000	9200	9200	9200	-3.6	0	0	4.3	3.4	3.0	2.8	0
Transport/Comm/Util.	10100	11700	13300	14600	2.9	1.3	0.9	4.0	4.3	4.4	4.5	145
Trade	33300	35600	41800	45900	1.3	1.6	0.9	13.0	13.2	13.7	14.1	515
Finance/Ins/R. Estate	10800	12000	14000	15400	2.1	1.5	1.0	4.2	4.5	4.6	4.7	170
Community Services	36100	39800	43400	45300	2.0	0.9	0.4	14.1	14.8	14.3	13.9	275
Business Services	10200	16100	27300	32500	9.1	5.3	1.7	4.0	6.0	9.0	10.0	820
Personal Services	18600	21900	23800	24900	3.3	0.8	0.5	7.3	8.1	7.8	7.6	150
Federal Admin.	96400	88200	90800	93200	-1.8	0.3	0.3	37.8	32.7	29.8	28.6	250
Provincial Admin.	1500	2300	2000	2200	8.5	-1.4	1.0	0.6	0.9	0.7	0.7	-5
Local Admin.	7600	8300	7600	7900	1.8	-0.9	0.4	3.0	3.1	2.5	2.4	-20
Other Admin	1300	1600	1900	2200	4.2	1.7	1.5	0.5	0.6	0.6	0.7	30
Total Employment	255300	269400	304300	325700	1.1	1.2	0.7	100.0	100.0	100.0	100.0	2815

[1]All employment in Tables 13(a) and 13(b) represents "full-time equivalents" or all of full time plus one-half of part-time.

TABLE 13b
PROJECTION II
SUMMARY

	EMPLOYMENT				AVERAGE ANNUAL % GROWTH			% OF TOTAL EMPLOYMENT				AVERAGE ANNUAL EMPLOYMENT INCREASE (1981-2001)
	1976	1981	1991	2001	'76-'81	'81-'91	'91-2001	1976	1981	1991	2001	
Primary Activity	2300	2100	2000	2000	-1.8	-0.5	0	0.9	0.8	0.6	0.5	-5
Manufacturing	16100	20600	27000	33400	4.9	2.7	2.1	6.3	7.6	8.6	8.2	640
Construction	11000	9200	13000	13000	-3.6	3.5	0	4.3	3.4	3.8	3.2	190
Transport/Comm/Util.	10100	11700	15500	20600	2.9	2.8	2.8	4.0	4.3	4.6	5.1	445
Trade	33300	35600	44600	52100	1.3	2.3	1.6	13.0	13.2	13.2	12.9	825
Finance/Ins/R. Estate	10800	12000	14900	17500	2.1	2.2	1.6	4.2	4.5	4.4	4.3	275
Community Services	36100	39800	46700	52600	2.0	1.6	1.2	14.1	14.8	13.8	13.0	640
Business Services	10200	16100	26900	37600	9.1	5.1	3.3	4.0	6.0	8.0	9.3	1075
Personal Services	18600	21900	25700	28900	3.3	1.6	1.2	7.3	8.1	7.6	7.1	350
Federal Admin.	96400	88200	107500	131100	-1.8	2.0	2.0	37.8	32.7	31.8	32.4	2145
Provincial Admin.	1500	2300	2700	3000	8.5	1.6	1.1	0.6	0.9	0.8	0.7	35
Local Admin.	7600	8300	9700	10900	1.8	1.6	1.2	3.0	3.1	2.9	2.7	130
Other Admin	1300	1600	1900	2200	4.2	1.7	1.5	0.5	0.6	0.6	0.6	30
Total Employment	255300	269400	338100	404900	1.1	2.3	1.8	100.0	100.0	100.0	100.0	6775

TABLE 14

SUMMARY OF EMPLOYMENT BASED FORECAST (2001)

Variable	1981	Projection	
		I	II
1. population	546,800	623,000	723,000
2. full-time equivalent jobs*	269,400	325,700	404,900
3. total jobs**	293,700	353,000	442,500
4. persons supported per job	1.9	1.8	1.6
5. employed labour force***		338,900	424,800
6. Labour force activity (approx)			
- participation rate	70%	70%	73%
- unemployment rate	7%	7%	5%
7. total new jobs per year		2,970	7,470
total f.t.e.****		2,820	6,780

*From Tables 13(a) and (b)

**total Jobs = full time and part time where part time is assumed to be 17% of the total. Full time equivalents = full time plus one half of part time.

***employed labour force assumes that 4% people have more than one job.

****this is compared to total per year 1976-1981: 4250
f.t.e. per year 1976-1981: 2810

turn of the century, this could support 623,000 people assuming a 70% participation rate. However, if the participation rate was 65%, the population supported would be 729,000. Currently, the participation rate is between these two levels. 2. Using Projection I, with reference to Table 13(a), approximately half of the jobs in Ottawa-Carleton in 2001 are there primarily to serve the local population. If the population is higher or lower, this number of jobs will change.

d. Implications for official plan policy

D. IMPLICATIONS FOR OFFICIAL PLAN POLICY

1. Introduction

Two of the concerns of the Regional Official Plan are the adequate provision for expansion and diversification of jobs and the distribution of jobs throughout the planning area. This section of the report deals with the assumptions and objectives contained in Section 2.5 of the Official Plan. It must be borne in mind that the Plan deals with a threshold population of 1 million persons and does not specify a particular date when this would be achieved. The preceeding exercise however, deals with particular years and the associated employment levels.

2. Expansion and Diversification of Employment

a) Sector growth

1) The Official Plan envisaged an employment level of 450,000 to support a population of 1 million people. This represents 2.2 persons per job, the ratio that existed in 1971. However, by 1981, the ratio had already dropped to 1.9 and is projected to decline to around 1.7 by the turn of the century. This means that to achieve the same amount of population growth experienced in the late sixties requires the creation of a larger number of jobs. This has implications for the amount of land required for employment activities and the services required to support them.

2) The Regional Official Plan assumed an average annual growth rate in the National Capital Region for federal government employment of 2% between 1971 and 2001. In fact, the average rate was 3.7% compounded annually over the past ten years. It is expected that the rate will decrease in the future so that an average of 2% per year between 1971 and 2001 will be realized.

3) There has been a much more rapid growth in the service sector than was considered in the Regional Official Plan. It assumed that community, business and personal services, in conjunction with government, would maintain a 61% share of total employment. In fact, in 1976 this group represented 67% of the total which declined only to 66% in 1981 despite the loss of thousands of federal government employees resulting from relocation and decentralization. It is expected that government services will decline in their share of the total and non-government services will increase their share so that overall, a 66% share in these service groups will be maintained. The strength of the service sector, traditionally a large employer of women, suggests that the female participation rate will continue to increase.

4) Current projections assume that manufacturing will contribute more to the local economy than envisaged in the Regional Official Plan. In 1971 this sector represented 6.6% of all employment in Ottawa-Carleton and was assumed to decrease to 5.5% at the threshold population. However, in 1981 it represented 7.6% of all employment and is currently projected to achieve levels between 8% and 9% of the total at 2001.

5) In most other cases, including trade, construction, finance and transportation, current projections assume a slightly smaller contribution than envisaged in the plan.

b) Diversification of jobs

1) The Plan assumed non-federal

employment would increase more rapidly than federal employment. The two projections developed in this report show federal employment growth at the same rate or slower than in other sectors. In all cases it is predicted to decrease in its share of total employment. This is primarily due to the momentum of the service sector but also to expected growth in manufacturing.

3. Distribution of Employment

a) Industrial Parks

The Regional Official Plan projected that 20% of employment would be in industrial areas at the threshold population. In 1971 industrial employment (all employment in industrial areas) was less than 10% of total employment. By 1981 it had increased to 17% and is likely to surpass the 20% level during the planning period. This is because industrial parks are capturing more service sector and office employment than was originally expected. Also, manufacturing employment, which is primarily located in industrial parks, is projected to perform well.

b) Distribution by Area

It is difficult to compare current trends with respect to employment distribution to the projected threshold pattern. At the threshold population of 1 million people, the urban communities will be at their ultimate population and employment level. However, a few comments can be made.

1) Central area: In the Official Plan, the central area is projected to achieve a level of 100,000 jobs. In the past 5 years however there has been very little growth in employment in this area primarily because of the relocation of some federal employees to Hull and the demolition of some buildings. In 1981, there were estimated to be 64,000 central area employees. The central area is expected to recover with continuous growth in government and services and the associated office requirements. In addition there will be substantial employment growth resulting from the Rideau Centre project and the associated development in the Rideau Area.

2) Urban Communities: The urban communities were expected to grow from almost no employment in 1971 to 83,000 opportunities at the threshold population. Employment in trade and non-governmental services has generally been keeping pace with population growth. However, the West Urban Community has achieved a significantly higher level of manufacturing employment than envisaged by the Plan whereas the East Urban Community has captured almost none. At this early stage in their development, it is difficult to comment on potential growth patterns.

3) Rural Area: The rural area was expected to gain 2,000 employment opportunities between 1971 and the threshold population of 1 million. In fact, by 1976 this level had been reached and by 1981 an additional 600 jobs located here, primarily in industrial areas. It is likely that rural employment will continue to increase.

c) Location with Respect to Transit Routes.

It is the intent of the Regional Official Plan to achieve a distribution of work places to promote the use of the public transit system. To this end, economic activities are encouraged to locate in a few concentrated areas served by transit. The concept of district centres was developed to help promote this concentration.

In 1981, 74% of employment was located in the greater central

area, industrial parks, institutions, office areas and retail nodes. It is likely that future employment growth will reinforce this concentrated pattern of development especially in light of the expected performance of the central area and industrial parks. In addition, the urban communities will be developing their town centres as concentrations of employment.

As far as district centres go though, it is as yet too early to determine their impact. In many cases the district centres designated in the Official Plan are no longer located on the rapid transit routes because the proposed routes have been relocated since the adoption of the Official Plan. Part of the Official Plan review will be to reevaluate the configuration of and activity at district centres.

4. Summary

a) more jobs will be required to support any given population than is envisaged in the Regional Official Plan due to: i) a larger proportion of the population of working age and ii) increased participation rates of these people.

b) The service sector will expand more rapidly than assumed at the time of development of the Regional Official Plan. Much of this is associated with office employment. This will help to reinforce the central area as a major employment location.

c) Industrial parks will capture more retail and service sector employment than expected in developing the Regional Official Plan. Since these are often in multi-use, multi-storey buildings, this will serve to increase employment densities in these areas.

d) Federal government employment will continue to decrease slightly in its share of total employment but will remain the major influence on the performance of the local economy.

e) The use of public transit, particularly the rapid transit system, will be encouraged, if the distribution of new employment continues to follow recent trends of concentration as discussed in 3. c).

e. conclusions

E. CONCLUSIONS

The projection of employment indicates that the range of population projections between 623,000 and 723,000 at the turn of the century is reasonable.

The lower projection represents an annual average rate of job expansion not too different from that which occurred in the past five years in terms of full-time equivalents. At the turn of the century it implies a small increase in the rate of participation in the labour force that is easily attainable given the trends over the past 10 years. Therefore, the 623,000 projection is considered a conservative projection.

The high projection is intended to represent an upper limit and depends on a much higher rate of job creation especially in federal employment. It also indicates a continuing increase in participation in the labour force with declining unemployment rates.

The range of employment and associated population projections presented in this report form the basis for developing and testing future options for the geographic distributions of population and employment in Ottawa-Carleton.

A number of alternative options have been identified in the report, Options of Future Growth, Ottawa-Carleton. It is intended that detailed analyses will be carried out on each of the options.

Footnotes

1. i) Population Forecasts, Ottawa-Carleton: 1976-2001 (October, 1980)
   ii) Mobility in Ottawa-Carleton (Aug. 1980)
   iii) Household Trends and Forecast (Dec. 1981)
   iv) Employment in Ottawa-Carleton, 1976-1981 (Feb. 1982)

2. Refer to report Population Projections (Nov. 1982)

3. Labour Market Development in the 1980's. Employment and Immigration Canada (July, 1981)

4. 1981 Federal Employment Survey. Summary of Findings. National Capital Commission (November, 1981)

5. The Standard Industrial Classification has been used with some modifications. All federal government employment is located under that heading regardless of whether it is a print shop (manufacturing) an airport (transportation) and so on. Similarly, all local government employment is under that heading including libraries (community services), O-C Transpo (transportation) and Regional Health Units (services).

6. Federal Government Employment in Metropolitan Areas. Statistics Canada publication 72-205, Annual.

7. See 4 above.

8. Bird, Richard N. The Growth of Public Employment in Canada (Toronto, 1979).

Notes to Figures

1. Figure 3 - Source: Statistics Canada, Labour Force Survey, Catalogue 72-201 (Annual)

2. Figure 5 - Source: Statistics Canada, Labour Force Survey, Catalogue 72-201 (Annual)

3. Figure 6 - Source: Statistics Canada, Employment, Earnings and Hours, Catalobue 72-002

4. Figure 7 - Source: Statistics Canada, Federal Government Employment in Metropolitan Areas, Catalogue 72-205

5. Figure 8 - Source: Local Government Employment, Catalogue 72-001. Data for 1970 to 1980 represent the Ontario portion of the Ottawa-Hull CMA. Data for 1981 are derived from an in-house employment survey.

POOR

QUALITY

ORIGINAL